MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2017/2018

TSN2201/TCE2321 –COMPUTER NETWORKS

(All sections / Groups)

21 OCTOBER 2017
9:00 – 11:00
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 5 pages including this cover page.
2. This Question paper contains **SIX** questions of **10** marks each. Answer any **FIVE** questions.
3. The distribution of marks for each question is given.
4. Write all your answers in the Answer Booklet provided.

Question 1

(a) State the FOUR physical topologies in networking. Among the topologies, which of the topology requires the most input/output ports for every device in the network? Explain your answer.

(3 marks)

(b) What are the names of data for Transport and Network layers in the OSI model? Explain briefly the main responsibility for each of the layers above.

(3 marks)

(c) List the FOUR levels of addresses that are used in the TCP/IP protocols suite. Specify the length (bits) of each address that you have listed

(4 marks)

Question 2

(a) A noisy channel with a bandwidth of 6000 KHz has a signal-to-noise ratio of 2000. What is the maximum data rate supported by this channel?

(3 marks)

(b) Explain briefly the multimode and single-mode propagations in fiber optic cable. Which propagation mode has the lower signal distortion?

(3 marks)

(c) Given the dataword 1101010011 and the divisor 1001, calculate the

(i) CRC (3 marks)
(ii) Codeword generated at the sender side (1 mark)

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Question 3

(a) Given a 6-bit frame sequence number, what is the maximum size of the send and receive windows for each of the following protocols:

(i) Selective- Repeat ARQ
(ii) Go-Back-N ARQ
(iii) Stop-and-Wait ARQ

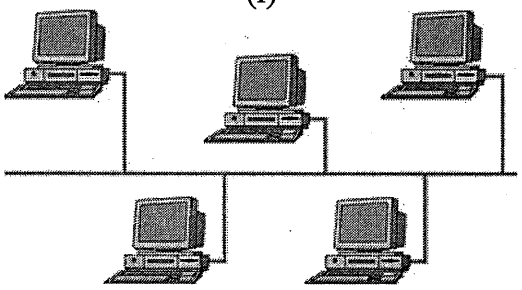
(3 marks)

(b) Define the term controlled access. State the THREE controlled access protocols. Can collision occur in controlled access? Explain your answer.

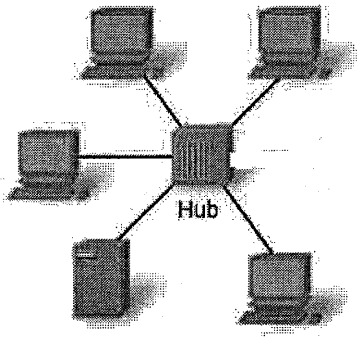
(4 marks)

(c) Identify the number of collision domains for the following networks. (3 marks)

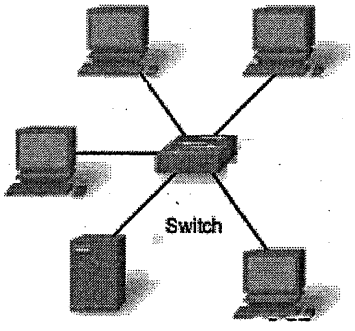
(i)



(ii)



(iii)



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Question 4

(a) The data rate of 100BaseT network is 100 Mbps. How long does it take to create the smallest frame? Show your calculation.

(2 marks)

(b) In a subnet, we know the IP address of one host is **25.25.12.18/28.**

(i) What is the class and default network mask for this IP? (1 mark)
(ii) What is the first address (network address) of this subnet? (2 marks)
(iii) What is the last address (limited broadcast address) of this subnet? (2 marks)
(iv) What is the number of addresses in this subnet? (1 mark)

(c) Abbreviate the following IPv6 addresses. (2 marks)

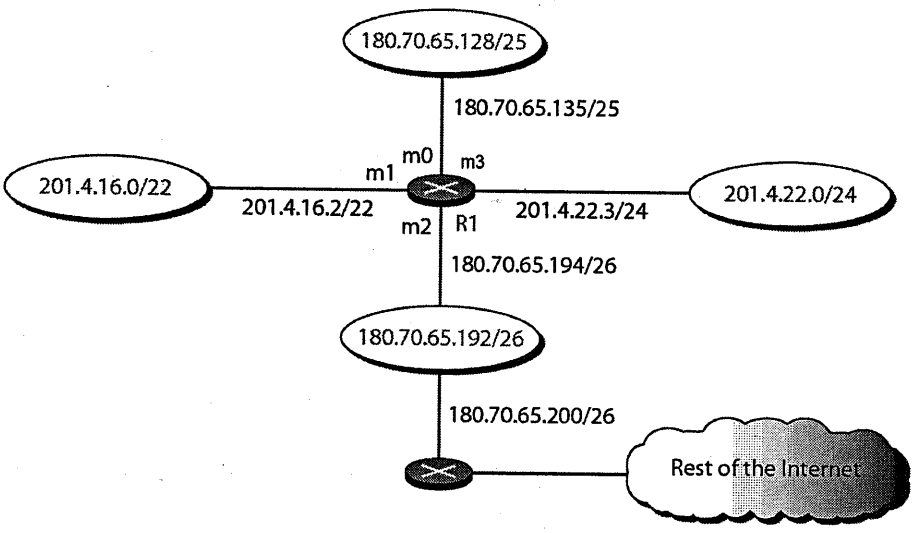
(i) 2001:0DA8:E800:0000:0000:0000:0000:0001
(ii) FF02:0:0:0:0:0:0:1
(iii) 3FFE:0501:0008:0000:0260:97FF:FE40:EFAB
(iv) 0:0:0:0:0:0:0:1

Question 5

(a) ICMP and IGMP are the two other supporting protocols used in the network layer. Explain briefly the function of each protocol.

(2 marks)

(b) Given the network in the following figure.



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(i) Fill the routing table for Router **R1** after it has been configured using static routing configuration. (2 marks)

Mask	Network address	Next Hop	Interface

(ii) Describe the forwarding process if a packet arrives at R1 with the destination address 201.4.22.35. (2 marks)

(iii)Describe the forwarding process if a packet arrives at R1 with the destination address 18.24.32.78. (2 marks)

(c) What is the difference between the two building blocks of a wireless LAN, Basic Service Set (BSS) and Extended Service Set (ESS)? (2 marks)

Question 6

(a) Compare between MTAs and MAAs and discuss briefly the protocols used by each agent. (3 marks)

(b) What is traffic shaping? Name two methods used to shape traffic. (2 marks)

(c) What are the functions of a network management system? (3 marks)

(d) How does IPSec create a set of security parameters? (2 marks)

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